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ABSTRACT

A study investigated the relationship of transactional models of stress management and appraisal-emotion relationships to emotions produced by taking a new job. The participants, 231 graduate students, completed measures of cognitive appraisals, stress coping resources, and emotional reactions at the time of taking a new job and some time later. Regression analyses revealed that cognitive appraisals and appraisals of coping resources were significant predictors of immediate emotional response. Although significant, however, cognitive appraisals and appraisals of coping resources were not useful predictors of later emotional response. Implications for health psychologists working with stressful events are that future attention might be paid to which appraisals are most important in producing certain emotions, which may have important clinical implications. (Contains 31 references.) (Author/KC)

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RUNNING HEAD: Job and Stress

Transactional Model of Coping, Appraisals, and Emotional Reactions to Stress

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Abstract

This study investigates the relationship of transactional models of stress management and appraisal-emotion relationships to emotions produced by taking a new job. The participants, 231 graduate students, completed measures of cognitive appraisals, stress coping resources, and emotional reactions at two different times. Regression analyses revealed that cognitive appraisals and appraisals of coping resources were significant predictors of immediate emotional response. However, while significant, cognitive appraisals and appraisals of coping resources were not useful predictors of later emotional response. Implications for health psychologists working with stressful events are discussed.

Transactional Model of Coping, Appraisals, and Emotional Reactions to Stress

Introduction

The relationship between cognitions and emotions pervades most clinical concerns, especially in the field of health psychology (Mandler, 1992). The connection between health and psychology is particularly evident with stress-related emotions in the workplace: expressed and felt emotions are indicators of employee health and satisfaction (Rafaeli & Sutton, 1987) and a wide body of research has documented the health consequences of career-related events (Fusilier and Ganster, 1987; O'Neill and Zeichner, 1985; Stumpf, Brief, and Hartman, 1987). However, much of this attention has focused on job loss (Prussia, Kinicki, & Bracker, 1993) and there is a paucity of literature which guides health psychologists in helping their clients confront other life demands, such as starting a new job. This study investigates the relationship of transactional models of stress management and appraisal-emotion relationships to emotions produced by taking a new job.

Transactional models of stress emphasize the perceptual nature of stress-produced emotions (Cox, 1978; Folkman & Lazarus, 1988; Matheny, Aycock, Pugh, Curlette, & Canella, 1986), which are hypothesized to result from an imbalance between two distinct processes: 1.) an appraisal of the demands of a situation and 2.) an appraisal of the adequacy of one's resources for coping with

the demand. Researchers have been successful in developing instruments to measure appraisals of one's coping resources which are hypothesized to be relatively stable across time and situations (Hobfoll, 1988; Matheny et al., 1986), and recently appraisal theorists have developed models for appraisals of events and their relationship to discrete emotional states.

Appraisal Theory

Roseman, Spindel, and Jose (1990) have developed a model for measuring the relationship between specific thoughts and emotions was supported in several studies (Roseman, 1984; 1991) and similar theories received empirical support from other appraisal theorists (Scherer, 1982; 1984; Smith & Ellsworth, 1985; 1987). Roseman et al. (1990) postulated that cognitive appraisals of events are based on six specific dimensions: *situational state*, an appraisal of whether an event is consistent or inconsistent with one's desires; *motivational state*, which refers to whether the individual is seeking something positive or striving to avoid something painful; *probability*, which refers to the perceived likelihood of an event's occurrence; *power*, the degree to which individuals believe they are capable of coping with a given situation; *legitimacy*, which refers to whether or not the individual believes they deserved for an event to happen; and *agency*, which consists of three separate sub-dimensions: (1.) agency-self, the degree to which an event is perceived as caused by oneself; (2.) agency-other, the degree to which the event is

perceived as caused by another person; and (3.) agency-circumstance, the degree to which the event is perceived as caused by external circumstances.

Roseman et al. (1990) found that by measuring appraisals along each of these dimensions an individual's emotional reaction could be predicted. The theory includes 10 specific negative emotions - disgust, distress, sadness, fear, unfriendliness, anger, frustration, shame, regret, and guilt. The six positive emotions were joy, relief, affection, pride, hope, and surprise. Figure 1 illustrates the hypothesized relationship between appraisals and discrete emotional states.

Insert Figure 1 About Here

The emotions in the boxes in Figure 1 are the result of the appraisals which appear along the border. For example, the appraisal dimension of power is listed on the right side of Figure 1 using the descriptors weak (low power) and strong (high power). Along the left side of Figure 1 are the descriptors associated with the agency dimension (circumstance-caused, other-caused, and self-caused). The agency dimension is further divided to account for the probability dimension (certain/uncertain). The situational state appraisal dimension (using the descriptors motive-consistent and motive-inconsistent) is represented along the top of Figure 1. The situational state

dimension is further divided to reflect appraisals on the motivational state dimension (appetitive/aversive). By tracing down or across from the appraisals made of an event, one can determine the predicted emotion (see Figure 1).

As an example, an event that is appraised as motive-inconsistent (low on the situation state dimension), one in which the individual perceived themselves as strong (high on the power dimension), and one appraised as caused by circumstances (high on the agency-circumstance dimension) results in frustration. An alternative appraisal on one dimension, such as an event being caused by another person (high on agency-other), not circumstances, would lead to a different emotion, in this case anger.

The model hypothesized by Roseman et al. (1990), posits six specific cognitive dimensions: situational state, motivational state, probability, power, agency, and legitimacy. Roseman et al. (1990) found that by measuring appraisals along each of these dimensions an individual's specific emotional reaction could be predicted. The theory includes ten negative emotions and six positive emotions.

It has been suggested that there is a temporal difference between the two constructs measured in this study, cognitive appraisals of events and appraisals of stress coping resources (Greenberg & Safran, 1981; 1984). Cognitive appraisals are believed to be immediate, involuntary evaluations of events

(Roseman et al., 1990), whereas stress coping resources are believed to be mobilized sometime after an event occurs (Matheny et al., 1986). A further understanding of the inter-relationship of these cognitive variables would seem to have important implications for health psychologists in helping clients adjust to new work situations in particular and life demands in general. The present study was therefore conducted to test three related research questions: 1.) whether underlying subgroups of the emotions reported by participants can be determined; 2.) whether immediate emotional reactions to taking a new job are significantly predicted by primary appraisals of the event; and 3.) whether subsequent emotional reactions to taking a new job are significantly predicted by secondary appraisals of one's coping resources.

Methods

Participants: Participants were 231 masters-level counseling students enrolled in a large, southeastern university. The mean age was 32, 85% of participants were female and 15% male; 89% were caucasian, 6% were African-American, and 5% were from other racial backgrounds.

Instrumentation

The stressful event of taking a new job was found to be the most often occurring stressors in a study using this same population of participants by Zucker, McCarthy, Orenstein, & Brack (1992) and was experienced by 45% of the participants

within the year prior to taking the survey. To measure participants' cognitive appraisals and the emotions produced by taking a new job, participants completed a questionnaire adapted from Roseman et al. (1990). The participants were asked to first complete an emotions inventory which asks them to identify the emotions produced at the time the event occurred. Participants were then asked to tell a story about what happened to them when the event occurred. This procedure was included because in pilot-testing Roseman (1982) found that some emotional events involve multiple situations, appraisals, and emotions. Thus, participants were asked to focus on appraisals of the part of the event that led directly to the emotions being examined in the questionnaire.

Participants were next asked to complete a questionnaire which measured their cognitive appraisals of taking a new job. This questionnaire was used by Roseman et al. (1990), and is a 17-item questionnaire designed to measure eight appraisal dimensions. Participants were then asked to complete a second emotions inventory which asked the participants to report their emotions about the stressful events at the present time. This second emotions inventory was included because of the large body of work which suggests that emotional experiences can change over time (Safran & Greenberg, 1982). Finally, participants completed the Coping Resources Inventory for Stress (Matheny, Curlette, Aycock, Pugh, & Taylor, 1987). The following sections describe

the instruments to be used in this study in more detail.

Emotions Inventory

As noted, the participants in this study were asked to complete two emotions inventories, one which asked participants about their feelings at the time of taking a new job and a second inventory which asked how they felt about the event at the present time. The first emotions inventory instructed participants to identify which emotions, from a list of 16 emotions used by Roseman et al. (1990) and one additional emotion added by Roseman et al. (1992), how they felt at the time that the stressor occurred.

This follows the procedure used by Roseman et al. (1990), except that the particular context of the event (taking a new job) was specified. In this regard, this procedure closely follows that used by McCarthy and Brack (1993). However, the emotions inventory used in this study was changed in that participants were next asked to indicate all of the emotions, from the same list of 17 emotions, that they felt at the time the stressor occurred. In addition, the participants were asked to rate the intensity with which they experienced each emotion on a 10-point scale from "0" (not at all) to "9" (very intense). These emotional intensity anchors follow the procedures used by Roseman (1982) and Roseman (1991).

Rating intensities for each of Roseman's 17 emotions were included in this study because of research which suggests that

categorization of emotional states does not fully describe the range of human emotional experience (Barrick, Hutchinson, & Deckers, 1989; Cupchick, & Poulos, 1984; Fujita, Diener, & Sandvik, 1991). These studies have suggested that emotional intensity is an important dimension to human experience. This study attempted to examine change in emotional experience as a function of cognition; in previous research, McCarthy, Brack, and Matheny (1993) found a relationship between cognitive appraisals and emotional reactions, but not a relationship between coping resources and emotions. One possible explanation for the latter finding is that the study did not include measures of the intensity of emotions. While Roseman et al.'s (1990) theory of the relationship of appraisals to discrete emotional states was supported, coping resources may not be as strongly related to discrete emotions as they are to the intensity with which these emotions are experienced. Participants were also asked to rate each of the emotions in Roseman et al.'s (1990) theory. This feature was included because much of the research on stress and emotions examines the impact of stress on a variety of emotions (Epstein & Katz, 1992).

After completing the first emotions inventory and the cognitive appraisal rating scale, the participants were next asked to complete the emotions inventory again to reflect their current feelings about the stressful events. The participants were asked how many months after the occurrence of the event

their emotional experience changed.

Roseman et al. (1990) Appraisal Rating Scale

For this instrument, participants were asked to respond to 17 questions measuring their appraisals of the stress-related event. The specific appraisals tested were situational state, probability, agency, motivational state, power, legitimacy, agency-circumstance, agency-other-person, and agency-self. Roseman et al. (1990) reported the following Cronbach alphas for these appraisals scales: situational state .86, motivational state .62, probability .56, power .74, and legitimacy .39 to .63. Each appraisal dimension was measured on a scale consisting of 3 items; each item asked the subject to rate the experience in terms of one of the appraisal dimensions on a nine-point scale. For example, a questionnaire item designed to measure the appraisal dimension of probability asks the subject, "During this event, how well could you predict what was going to happen in the situation?". The subject then responds on a ten-point scale from "0" (not at all well) to "9" (very well). The questions were ordered randomly on the questionnaire. Appraisal scores were calculated by averaging a respondent's score for each appraisal dimension. The appraisal ratings for circumstance-agency, other-person-agency, and self-agency were not combined, because prior research (Roseman, 1982; Smith & Ellsworth, 1985), indicated that alternative attributions of the causes of events are not always mutually exclusive.

The Coping Resources Inventory for Stress (CRIS) (Matheny, Curlette, Taylor, Pugh, & Taylor, 1987) was developed as a 280 item battery for measuring 15 coping resources which contribute to the successful management of stress. The CRIS yields 37 scores; an overall Coping Resources Effectiveness score (CRE), 12 Primary Scales, three Composite Scales, 19 Wellness Inhibiting Items, and five validity keys (Curlette, Aycock, Matheny, Pugh, & Taylor, 1990).

The 12 Primary Scales are Self-Disclosure, Self-Directedness, Confidence, Acceptance, Social Support, Financial Freedom, Physical Health, Physical Fitness, Stress Monitoring, Tension Control, Structuring, and Problem Solving, The three Composite Scales are Cognitive Restructuring, Functional Beliefs, and Social Ease. The particular scales used in this study will be Cognitive Restructuring, Functional Beliefs, Social Ease, from the Composite Scales, and Social Support, Confidence, and Structuring from the Primary Scales. These scales were selected because of their relationship to the other variables under investigation, namely cognitive appraisals and the emotions produced by stressful events (McCarthy & Brack, 1993).

Descriptions of the scales used in this study are as follows: cognitive restructuring, which measures one's ability to change one's thinking in order to reduce stress levels; functional beliefs, a measure of beliefs that are helpful in lowering stressful arousal and in preventing stressful

situations; social ease, which is a measure of the degree of comfort that is experienced in the presence of others; social support, a measure of the availability of family members and friends who can act as buffers against stressful life events; structuring, which measures the ability to organize and manage resources such as time and energy, and confidence, which measures one's faith in their ability to cope successfully with stressful life situations.

The 12 Primary Scales share no items and have moderate to low intercorrelations. The three Composite Scales are independent of one another but do share items with the Primary Scales. The overall CRE has a coefficient alpha of .97 and its test-retest reliability over a four-week time interval for college students is .95 (Curlette et al., 1990). The coefficient alphas for the scales used in this study are the following: Cognitive Restructuring .869, Functional Beliefs .868, Social Ease .887, Confidence .904, Social Support .881, and Structuring .858. The test-retest reliabilities for the scales used in this study are the following: Cognitive Restructuring .765, Functional Beliefs .933, Social Ease .863, Social Support .907, Confidence .913, and Structuring .889.

Matheny, Aycock, Curlette, and Junker (1993) found strong support for the convergent and divergent validity of the CRIS scales. Administered concurrently with the Interpersonal Behavior Survey, the Social Support Questionnaire, the State-Trait Anxiety

Inventory, the Depression Adjective Checklist, the Beck Depression Inventory, the Social Reticence Scale, and the Shipley Institute of Living Scales, the CRIS scales provided significant convergent correlations in 29 of 32 instances. Also as hypothesized, none of the 37 divergent correlations were significant.

A unique feature of this study was that the emotional intensity of all 17 emotions hypothesized by Roseman et al. (1990) were investigated in this study in response to the stressor, both at the time it occurred (hereafter referred to as T1) and at the present time about the stressful event (hereafter referred to as T2), which allows for a test of the differential predictive ability of cognitive appraisals and stress coping resources.

Results and Conclusions

To answer the first research question in this study, the 17 emotions proposed by Roseman et al. (1990) were analyzed using the data reduction strategy of factor analysis. Factor analyses were conducted for the emotions reported at the time each stressful event occurred (T1) and at the present time about each stressful event (T2). The purpose of this step is primarily that of dimension reduction: as the emotional responses of participants are the dependent variables in subsequent statistical analyses, factor analysis allows for dimension reduction of these variables (there were 17 emotions examined

both at Time 1 and Time 2 for each stressful event in this study). The factor extraction technique of principal components analysis (PCA) was used, as the primary goal of the factor analyses was an empirical summary of the data set (Tabachnick & Fidell, 1989). The varimax rotation scheme was used to produce orthogonal factors. The regression method was then used to create factor scores. The factor solution for the event of taking a new job at Time 1 produced four factors which accounted for 61.2% of the variance. The final statistics and factor loadings are presented in Table 1.

Insert Table 1 About Here

The factor solution for the event at Time 2 produced two factors which accounted for 56.4% of the variance. The final statistics and factor loadings for Time 2 are presented in Table 2.

Insert Table 2 About Here

To answer research question two, a stepwise regression analysis was conducted with Roseman et al.'s (1990) cognitive appraisal dimensions and coping resources as independent variables and each of the factor scores as criterion variables. For T1, there were four factors and thus four regression

analyses. For factor score 1, the regression analysis was significant ($F(6,196=18.963)$, $p<.001$), with six variables significantly predicting emotion factor score 1. The six variables were, in order of the absolute value of their standardized regression coefficients, situational state, cognitive restructuring, agency-other person, structuring, social support, and legitimacy. For factor score 2, the regression analysis was also significant ($F(5,197=12.583)$, $p<.001$), with five variables significantly predicting emotion factor score 2. The five variables were, in order of the absolute value of their standardized regression coefficients, legitimacy, agency-circumstance, power, situational state, and agency-other person. For the third emotion factor at T1, the regression analysis was significant, ($F(4,198=20.555)$, $p<.001$), with four variables significantly predicting emotion factor score 3. The four variables were, in order of the absolute value of their standardized regression coefficients, probability, cognitive restructuring, power, and agency-other-person. Finally, for factor score 4 at T1, the regression analysis was also significant, ($F(4,198=7.150)$, $p<.001$), with four variables significantly predicting emotion factor score 4. The variables were, in order of the absolute value of their standardized regression coefficients, cognitive restructuring, power, confidence, and agency-self.

To answer research question three, the independent variables

of cognitive appraisals and coping resources were used as predictor variables and emotions reported at T2 as criterion variables. At there were only two emotion factor scores at T2, there were only two regression analyses. The regression analysis was significant for factor score 1 ($F(3,184=25.742)$, $p<.001$), with three variables significantly predicting emotion factor score 1. The three variables were, in order of the absolute value of their standardized regression coefficients, motivational state, probability, and social support. The regression analysis was also significant for emotion factor score 2 ($F(3,184=8.242)$, $p<.001$), with three variables found to be significant predictors of emotion factor score 2. The three variables were, in order of the absolute value of their standardized regression coefficients, motivational state, agency-other-person and legitimacy.

Discussion

Safran and Greenberg (1982) believe that over time we begin to reappraise events; the results of this study suggest that initial cognitive appraisals predict emotions as well as coping resources both at T1 and T2. The results of the regression analyses in this study suggest that while cognitive appraisals are important in predicting emotional response, they were not all equally as important. This may in part be due to capitalization on error variance because of the stepwise method of model building, and the fact that emotional intensity factor score were used as dependent variables. However, it was consistently found

that the factor score on which the emotions of shame and guilt had high loadings were best predicted by appraisals of high agency-self and low power, as predicted by Roseman et al. (1990). While an appraisal of low situational state is also hypothesized as a predictor of these emotions, it was not found to be as important in predicting these emotions. Thus, if more complex models of emotional experience are to be used, future attention might be paid to which appraisals are most important in producing certain emotions, which may have important clinical implications. For example, McCarthy, Beaton, Brack, and Matheny (1994) in a qualitative analysis of the subject's responses to a similar questionnaire, found the appraisal dimension of power to be very important in producing the emotions of fear and anger.

Table 3 below summarizes the pattern of relationships of coping resources to emotional intensity factor scores for the event of taking a new job.

Insert Table 3 about here

An inspection of Table 3 reveals that for the immediate emotional experience of taking a new job (T1), low levels of social support, structuring, and confidence are related to higher levels of negative affect. The findings for the variable of confidence seem consistent with stress theory. As Curlette et al. (1990) point out, this variable is a measure of one's overall

ability to cope successfully with stressful demands. Bandura (1982) conceptualized this as self-efficacy, a general belief in one's ability to get along. It was also found that low levels of structuring, the ability to manage and organize resources, is also related to greater intensities of negative affect. Given the importance of this skill in securing and maintaining a job, this does not seem surprising.

What was surprising was the pattern of results for the cognitive restructuring variable. While lower levels of this variable were associated with greater intensities of factor score 1 at T1, higher levels of this variable were associated with greater intensities of factor scores 1 and 4 at T1. It is difficult to explain why higher levels of this coping resource are associated with greater intensities of negative emotions such as disgust, anger, guilt, and shame, when in most other cases higher levels of this predict lower levels of negative affect. Further investigation of this results seems warranted and is discussed in the section on implications for further research.

Several unexpected findings emerged when the differences across time (from T1 to T2) are considered. It was found that CRIS scales were equally as effective in predicting emotional states at T1 and T2, even though transactional models of stress (Cox, 1978; Hobfoll, 1988; Folkman & Lazarus, 1988; Matheny, et al., 1986) might hypothesize that resources would not be mobilized during the immediate evaluation of an event (T1). It

was also surprising that Roseman et al.'s (1990) appraisals predicted emotions at T2. There was some evidence that emotions at T1 were related to emotions at T2, which may in part explain how immediate appraisals (at T1) could still predict emotions at a later time (T2).

The regression analyses revealed that appraisals and coping resources could be used to predict the immediate emotions produced by starting a new job (T1), and those that are felt at a later time about that event (T2). However, the finding that cognitive appraisals closely fit theoretical predictions only at T1, and that only one coping resource predicted emotions at T2 indicates that cognitively-oriented health psychologists may want to be as specific as possible about the time frame of the cognitive-emotional linkages with which they are working. As both cognitive appraisals and coping resources were equally as effective in predicting emotions at T1, Greenberg and Safran's (1981; 1984) distinction between the time in which appraisals and reappraisals occur may not be as useful for clinicians as a focus on how both systems operate together in the emotional lives of clients.

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Table 1
Final Statistics and Rotated Factor Matrix for Emotional Intensity Factor Scores for the Event of Taking a New Job (T1)

	Factor 1	Factor 2	Factor 3	Factor 4
Eigenvalue	5.424	2.407	1.414	1.156
% Variance	31.9	14.2	8.3	6.8
Emotions				
joy		.727		
relief		.689		
affection		.619		
pride		.720		
hope	-.336	.525		
surprise		.638	.405	
disgust	.846			
distress			.782	
sadness	.704		.322	
fear			.871	
unfriendliness	.342			.405
anger	.728			.437
frustration	.542		.552	
shame	.403			.746
regret	.641		.314	.317
guilt				.865
contempt	.588			.339

Factor loadings of emotions for first emotional experience of taking a new job (T1)

Factor 1: disgust, anger, sadness, regret, contempt

Factor 2: joy, pride, relief, surprise, affection, hope

Factor 3: fear, distress, frustration

Factor 4: guilt, shame, unfriendliness

Note. Emotions are listed in order of the absolute values of their loadings on each factor; only emotions which loaded highest on a factor are listed.

Table 2
Final Statistics and Rotated Factor Matrix for Emotional Intensity Factor Scores for the Event of Taking a New Job (T2)

	Factor 1	Factor 2
Eigenvalue	7.058	2.525
% Variance	41.5	14.9
joy	-.355	.779
relief		.678
affection		.628
pride		.732
hope		.659
surprise		.623
disgust	.793	
distress	.800	
sadness	.760	
fear	.644	
unfriendliness	.721	
anger	.878	
frustration	.775	
shame	.692	
regret	.780	-.310
guilt	.574	
contempt	.802	

Factor 1: anger, contempt, distress, disgust, frustration, sadness, unfriendliness, regret, shame, fear, guilt

Factor 2: joy, pride, relief, hope, affection, surprise

Table 3
Empirical Relationship of Coping Resources to Emotional Intensity Factor Scores Based on Regression Analyses for the Event of Taking a New Job

Emotion Factor Scores

		CR[1]	CF[1]	ST[1]	SS[1]
T2	positive emotions				
	negative emotions				--
	disgust/anger	++		--	--
T1	fear/distress	--			
	guilt/shame	++	--		
	joy/pride				

Note. -- indicates a negative relationship between standardized value of regression coefficient and intensity of emotional factor scores. ++ indicates a positive relationship. CR = Cognitive Restructuring; CF = Confidence; ST = Structuring; SS = Social Support.

[1] Indicates CRIS variables which were used as predictor variables along with cognitive appraisals from Roseman et al. (1990).

Figure 1

Hypothesized Relationship Between Cognitive Appraisals and Emotions (from Roseman et al., 1990)
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